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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/915,640	07/26/2001	Hidemasa Yamaguchi	09792909-5089	6476

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EXAMINER

CHOWDHURY, TARIFUR RASHID

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 02/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/915,640

Applicant(s)

YAMAGUCHI ET AL. 

Examiner

Tarifur R Chowdhury

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ 6) ☐ Other: .

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### ***Claim Objections***

4. Claims 3, 4, 9, 10-18, 21 and 27-36 objected to because of the following informalities:

In claims 3, 4, 9, 21 and 27, "(m2" and "(m" should be changed to appropriate units.

In claims 10-18 and 28-36, " $0.7 < < 1.3$ " and "(Nx-Ny) (dfilm < 100 nm" should be corrected.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3-5, 7, 10-18, 21 and 28-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 5, applicant recites that, "said pixel electrode of said driving substrate or said counter substrate". However, according to the recitation of the base claim the pixel electrode is formed only on the driving substrate not on the counter substrate. Therefore, it is not clear as to how the pixel electrode is formed on the counter substrate when there is already a counter electrode present on the counter electrode. Therefore, claim 5 is vague and indefinite.

In claims 10-18 and 28-36, applicant recites in lines 13-15 that, "(n represents the refractive index anisotropy of said liquid crystal, and dLC represents the cell gap." However, it is not clear as to what applicants mean by "(n" and "dLC" since there is not mention of "(n" or "dLC" in the preceding lines of the claims or in claims that these claims depends from. Therefore, claims 10-18 and 28-36 are vague and indefinite.

Claims 3, 4 and 21 recites the limitation "the base area" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recite the limitations "the chiral pitch" and "the cell gap" in line 2. There are insufficient antecedent basis for these limitations in the claim.

Claims 10-18 and 28-36, recites the limitation "the viewing angle" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. **Claims 1, 2, 4-8, 10, 11, 13-17, 19, 21-26, 28 and 30-35 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Miyachi et al., (Miyachi), USPAT 6,384,889.**

10. Miyachi discloses and shows in Figs. 1A-1B, a liquid crystal display device of a multi-domain vertical-alignment mode, comprising:

- a driving substrate (21) having pixel electrode (24);
- a counter substrate (31) opposing the driving substrate (21) and having a counter electrode ((34);
- a liquid crystal (40) sandwiched between the substrates;

wherein molecules of the liquid crystal are aligned nearly perpendicular to the substrates when no electric field is produced, and are aligned nearly horizontally by the application of a predetermined voltage (col. 9, lines 25-39),

wherein the pixel electrode (24) has openings (24a) (applicant's alignment center portion) for orienting the molecules of the liquid crystal in all directions centered on a center point when voltage is applied, and

wherein an area of the alignment center portion of the driving substrate is set to be less than or equal to 5% of an area of one pixel (Figs., 2, 3).

Miyachi further discloses that the counter electrode (34) can have openings alternatively (col. 10, lines 57-61).

Miyachi also discloses that the number and arrangement (shape of the opening) need to be appropriately determined in consideration of both the viewing angle and brightness required by the use of the LCD device (col. 12, lines 30-34)

Even arguing that Miyachi does not explicitly disclose that the area of the alignment center portion of the driving substrate is set to be less than or equal to 5% of an area of one pixel, it would have been obvious to one of ordinary skill in the art to set the area at a desirable percentage because if the area occupied by the alignment center portion is excessively large then the light transmittance of the LCD device is excessively reduced and on the other hand when the area is too small the multi-domain effect is minimal and thus the viewing angle is reduced.

Accordingly, claims 1, 2, 4, 5, 19, 21 and 23 are anticipated or would have been obvious.

As to claims 6, 7, 24 and 25, Miyachi discloses that a chiral material is added to the liquid crystal and the chiral pitch is about 4 times the thickness of the liquid crystal layer (col. 4, lines 57-60).

As to claims 8 and 26, Miyachi discloses that the liquid crystal display device is of an active matrix type (col. 8., line 62).

As to claims 10, 11, 13-17, 28 and 30-35, Miyachi discloses and shows in Fig. 24A, a retardation film (604a) having refractive indices of  $N_x$ ,  $N_y$  and  $N_z$ , is placed between a polarizer (602a) and the counter substrate or the driving substrate and that the viewing angle characteristic of the LCD device is improved by setting a retardation of the retardation film to be about 0.5 to 1.5 (overlaps the claimed range) of a retardation of the liquid crystal layer (col. 23, lines 11-26).

As to claim 22, Miyachi discloses that the alignment disturbing surface is formed as alignment center portion by applying UV light (col. 20, lines 27-28).

**11. Claims 3, 9, 12, 18, 20, 27, 29 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyachi as applied to claims 1, 2, 4-8, 10, 11, 13-17, 19, 21-26, 28 and 30-35 above .**

12. Even though Miyachi does not explicitly disclose or show that the alignment center portion is a protuberance, common and known way to create a multi-domain liquid crystal display includes forming protuberance or alignment disturbing surface on a substrate and thus would have been obvious.

Setting the pixel pitch less than or equal to 70 micro meter is common and known in the art and thus would have been obvious to optimize device performance.

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Accordingly, claims 3, 9, 12, 18, 20, 27, 29 and 36 would have been obvious.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (703) 308-4115. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William L Sikes can be reached on (703) 305-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7005 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

  
T. Chowdhury  
Patent Examiner  
Technology Center 2800

TRC  
February 13, 2003